

Release notes for ENDF/B Development n-072\_Hf\_182  
evaluation



April 26, 2017

- psyche Warnings:

1. Non-threshold reaction with Q value differing from PSYCHE's expectations  
*FILE 3 / SECTION 22 / THE CALCULATED Q 1.14437E+06 DISSAGREES WITH THE GIVEN Q 1.21482E+06 (0): Iffy Q*

```
FILE 3
SECTION 22
THE CALCULATED Q 1.14437E+06 DISSAGREES WITH THE GIVEN Q 1.21482E+06
```

- recent Warnings:

1. Fission widths given for non-fissile nucleus, but are zero  
*0: Fission?*

```
Calculate Cross Sections from Resonance Parameters (RECENT 2015-1)
=====
Retrieval Criteria----- MAT
File 2 Minimum Cross Section- 1.0000E-10 (Standard Option)
Reactions with No Background- Output (Resonance Contribution)
... [370 more lines]
```

- fudge-4.0 Warnings:

1. Cross section does not match sum of linked reaction cross sections  
*crossSectionSum label 0: total (Error # 0): CS Sum.*

```
WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 0.53%
```

- fudge-4.0 Errors:

1. Calculated and tabulated Q values disagree.  
*reaction label 11: n[multiplicity:'2'] + Hf181 (Error # 0): Q mismatch*

```
WARNING: Calculated and tabulated Q-values disagree: -6728809.040313721 eV vs -6717996. eV!
```

2. The r(E) in Kalbach-Mann formulation is outside of allowed bounds  
*reaction label 11: n[multiplicity:'2'] + Hf181 / Product: n / Distribution: / Kalbach-Mann - KalbachMann: (Error # 0): Kalbach goof*

```
WARNING: Invalid 'r' in KalbachMann distribution at incident energy 1.9e7 eV. Value=-9.509379e-06, should be in r
WARNING: Invalid 'r' in KalbachMann distribution at incident energy 2.e7 eV. Value=-0.0005687542, should be in r
```

3. Calculated and tabulated Q values disagree.  
*reaction label 12: n[multiplicity:'3'] + Hf180 (Error # 0): Q mismatch*

```
WARNING: Calculated and tabulated Q-values disagree: -12423612.22814941 eV vs -1.24128e7 eV!
```

4. Calculated and tabulated Q values disagree.  
*reaction label 13: n + H1 + Lu181 (Error # 0): Q mismatch*

```
WARNING: Calculated and tabulated Q-values disagree: -8618689.674804688 eV vs -8607877. eV!
```

5. Calculated and tabulated Q values disagree.  
*reaction label 14: n + H2 + Lu180 (Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: -12519698.97824097 eV vs -12508890. eV!

6. Calculated and tabulated Q values disagree.  
*reaction label 15: Hf183 + gamma (Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: 5288058.906158447 eV vs 5298871. eV!

7. Calculated and tabulated Q values disagree.  
*reaction label 16: n + He4 + Yb178 (Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: 1204006.262573242 eV vs 1214819. eV!

8. Calculated and tabulated Q values disagree.  
*reaction label 17: H1 + Lu182\_s (Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: -3407058.969604492 eV vs -3396246. eV!

9. Calculated and tabulated Q values disagree.  
*reaction label 18: H2 + Lu181\_s (Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: -6394123.573883057 eV vs -6383311. eV!

10. Calculated and tabulated Q values disagree.  
*reaction label 19: H3 + Lu180\_s (Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: -6262466.037628174 eV vs -6251653. eV!

11. Calculated and tabulated Q values disagree.  
*reaction label 20: He3 + Yb180\_s (Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: -8524954.667755127 eV vs -8514142. eV!

12. Calculated and tabulated Q values disagree.  
*reaction label 21: He4 + Yb179\_s (Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: 5993372.086364746 eV vs 6004185. eV!

- **njoy2012 Warnings:**

1. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (0): HEATR/hinit (4)*

```
---message from hinit---mf6, mt 16 does not give recoil za= 72181
one-particle recoil approx. used.
```

2. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (1): HEATR/hinit (4)*

```
---message from hinit---mf6, mt 17 does not give recoil za= 72180
one-particle recoil approx. used.
```

3. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (2): HEATR/hinit (4)*

---message from hinit---mf6, mt 22 does not give recoil za= 72182  
one-particle recoil approx. used.

4. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (3): HEATR/hinit (4)*

---message from hinit---mf6, mt 28 does not give recoil za= 72182  
one-particle recoil approx. used.

5. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (4): HEATR/hinit (4)*

---message from hinit---mf6, mt 32 does not give recoil za= 72182  
one-particle recoil approx. used.

6. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (5): HEATR/hinit (4)*

---message from hinit---mf6, mt 51 does not give recoil za= 72182  
one-particle recoil approx. used.

7. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (6): HEATR/hinit (4)*

---message from hinit---mf6, mt 52 does not give recoil za= 72182  
one-particle recoil approx. used.

8. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (7): HEATR/hinit (4)*

---message from hinit---mf6, mt 53 does not give recoil za= 72182  
one-particle recoil approx. used.

9. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (8): HEATR/hinit (4)*

---message from hinit---mf6, mt 54 does not give recoil za= 72182  
one-particle recoil approx. used.

10. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (9): HEATR/hinit (4)*

---message from hinit---mf6, mt 55 does not give recoil za= 72182  
one-particle recoil approx. used.

11. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (10): HEATR/hinit (4)*

---message from hinit---mf6, mt 56 does not give recoil za= 72182  
one-particle recoil approx. used.

12. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (11): HEATR/hinit (4)*

---message from hinit---mf6, mt 57 does not give recoil za= 72182  
one-particle recoil approx. used.

13. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (12): HEATR/hinit (4)*

```
---message from hinit---mf6, mt 58 does not give recoil za= 72182
one-particle recoil approx. used.
```

14. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (13): HEATR/hinit (4)*

```
---message from hinit---mf6, mt 59 does not give recoil za= 72182
one-particle recoil approx. used.
```

15. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (14): HEATR/hinit (4)*

```
---message from hinit---mf6, mt 91 does not give recoil za= 72182
one-particle recoil approx. used.
```

16. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (15): HEATR/hinit (4)*

```
---message from hinit---mf6, mt203 does not give recoil za= 71182
one-particle recoil approx. used.
```

17. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (16): HEATR/hinit (4)*

```
---message from hinit---mf6, mt204 does not give recoil za= 71181
one-particle recoil approx. used.
```

18. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (17): HEATR/hinit (4)*

```
---message from hinit---mf6, mt205 does not give recoil za= 71180
one-particle recoil approx. used.
```

19. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (18): HEATR/hinit (4)*

```
---message from hinit---mf6, mt206 does not give recoil za= 70180
one-particle recoil approx. used.
```

20. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (19): HEATR/hinit (4)*

```
---message from hinit---mf6, mt207 does not give recoil za= 70179
one-particle recoil approx. used.
```

21. There is bad Kalbach parameter (r(E) or otherwise)  
*check...ace consistency check (0): ACER/check energy distributions (0)*

```
check energy distributions
  consis: bad kalbach r for (n,2n)at  1.900000E+01 -> 2.000000E-01
```

22. There is bad Kalbach parameter (r(E) or otherwise)  
*check...ace consistency check (1): ACER/check energy distributions (0)*

```
check energy distributions
  consis: bad kalbach r for (n,2n)at 2.000000E+01 -> 2.000000E-01
```

23. There is bad Kalbach parameter ( $r(E)$  or otherwise)  
*check...ace consistency check (2): ACER/check energy distributions (0)*

```
check energy distributions
  consis: bad kalbach r for (n,2n)at 2.000000E+01 -> 4.000000E-01
```

24. There is bad Kalbach parameter ( $r(E)$  or otherwise)  
*check...ace consistency check (3): ACER/check energy distributions (0)*

```
check energy distributions
  consis: bad kalbach r for (n,2n)at 2.000000E+01 -> 6.000000E-01
```

25. There is bad Kalbach parameter ( $r(E)$  or otherwise)  
*check...ace consistency check (4): ACER/check energy distributions (0)*

```
check energy distributions
  consis: bad kalbach r for (n,2n)at 2.000000E+01 -> 8.000000E-01
```